turbed so much, and shall be accused of "vandalism" under the mask of advancing scientific research.

There is no doubt that the excavations have been carried on too fast. The great museum in Egypt has no proper catalogue, and is arranged and filled up with things in a most unsatisfactory way; many objects have not even got the date when found. In this way, what would be treasures have become absolutely valueless on account of the carelessness of former officials, who constantly depended on each other, and, in many cases, on their memory, for the facts connected with objects found. This will always be the state of things unless the excavations are supervised by museums; for the haste with which they are carried on, does not allow time to work out the history properly. The things are merely brought under cover; they accumulate, and only short notices are written about them. It is for this reason that many noted things found have not been heard of till years afterwards; likewise, before the old treasures were properly examined, others have been dug out, particular attention being given to pretty things with which to ornament museums. Consequently, while search was being made for inscriptions, smaller objects were neglected, and many details overlooked.

Whereas formerly complaints were ever being made about the difficulty of obtaining permission to excavate, now the state of things is just the opposite. There is too much liberality; men are allowed to excavate, who have no knowledge whatever as to how to set about it, and have no serious object in view. Valuable things have been removed from the Fayûm, Heliopolis, and other places by quite uneducated people, and sold as market goods in Cairo. All this sort of thing makes the advancement of science a farce.

A natural consequence of this hasty digging, but a state of things greatly to be lamented, is the destruction of the ancient topography. The confusion caused is beyond description. It is very desirable that there should be an international inspection committee, which would insist on things being cleared up, and not allow the graves and tombs to remain open, with bones and limbs of the dead in them, which is so often the case.

Another deplorable fact is the absolute ignoring of objects connected with natural history. These objects require special care when being dug out, and also are more difficult to find. Their destruction greatly endangers the science of antiquity, and many an object, the value of which is now unknown, may in some future period be the key to some great problem. Likewise the bones of domestic animals are overlooked, although the many pictures of these animals help to make a study of them very interesting, and the remains of plants and flowers are similarly neglected, though these objects are the stepping-stones to the restoration of the ancient history.

JOSEPH THOMSON.

By the death of Mr. Joseph Thomson, we have to mourn one of the foremost of contemporary African explorers. His loss is all the more sad, as it comes in what ought to have been the prime of his manhood. When we remember what Thomson has done, what a part he played in the exploration of British East Africa and in securing for England her supremacy on the Niger, it is difficult to realise that he has done it all before the age of thirty-eight. Joseph Thomson was born in Dumfriesshire, on February 14, 1858, and was the son of a quarry-owner. He was educated at Edinburgh, and early took a keen interest in African exploration, in which he first personally joined as assistant in Keith Johnston's expedition to the African Lakes. This left Dar-es-Salaam early in 1879, but before it reached its first objective point—Nyasa—its leader died. Thomson was then little over twenty-one years of age; but he rose to the occasion, took command, and single-handed carried the expedition to a triumphant conclusion. He explored the plateau between Nyasa and Tanganyika, and the western shore of the latter from its southern end to the Lukuga; there he added another to the pile of contradictory statements as to the relations of this river and the lake. He tried to work westward to the Upper Congo, but, owing to the hostility of the natives, he was compelled to return to Ujiji and back to the coast. This was Thomson's first expedition, and in some ways it was his best, for his scientific observations were then made with greater care and detail than in any of his later journeys. The following year he returned to East Africa to search for the coal reported on the Rovuma. Next year he was sent to Africa on the famous expedition, the story of which he so brilliantly told in "Through Masai-land." He left Mombasa in 1882 with a powerful caravan, fitted out by the Geographical Society, in order to determine whether there be a practical route across the Masai country to the Nyanza, to explore Mount Kenya, and to study the meteorology, ethnology, and natural history of the region traversed. After great difficulties with his men, he marched inland to Taveta, at the foot of Kilima Njaro. There he joined a powerful caravan under the famous slave-trader, Jumbo Kinameta, and together they traversed Masai-land to Lake Naivasha, going first along the route of Last, and then along that of Fischer. Thomson then turned to the east, and was the first European to set foot on the plateau of Laikipia and to see Kenya from the west. But the Masai were present in force, and Thomson had either to fight or retreat. He chose the latter alternative, and, contenting himself with a distant view of Kenya, under cover of night fled northward to Baringo. He explored this district, which he was the first European to reach, and then went on to the Nyanza, and back to the coast. His next expedition was up the Niger. His tact and patience in dealing with natives, here stood him in good stead, and rendered this expedition his most successful, for he returned with the treaties which gained for England practical supremacy in the Niger Basin. In 1888, with Mr. Crichton-Browne, he undertook a journey to south-western Morocco, materially correcting some previous descriptions of the structure of that country. He took a series of altitudes, and with characteristic acumen discovered for himself the divergences between the results given by aneroids and boiling-point thermometers; but it was equally characteristic that he did not follow up the subject, and contented himself with attributing it to the imperfection of his instruments. In 1891 he was sent by the British South Africa Company to annex the metalliferous region of Katanga. He was greatly hindered by the Portuguese, who fired upon his flotilla, and when he reached the frontier of Katanga he found that Captain Stairs's expedition had arrived before him, and secured the country for the Belgians. Thomson returned to England with his health ruined by his six African expeditions. Residence at Kimberley saved him for a while, but phthisis had taken too firm a hold to be dislodged, and after a lingering illness he passed away on August 2.

It is too early to attempt to estimate fairly Thomson's work as an explorer; but no one could follow in his footsteps without recognising how singularly keen was his topographic insight, how rapid his powers of observation, and how marvellously true were his instincts. His powers, in fact, amounted almost to genius. In his quickness of perception and his literary skill he reminds us of Burton, though without Burton's scholarship and colossal capacity for steady work. But Thomson's brilliant gifts had their dangers, and it is impossible to compare his work with that of some of his contemporaries, or even of some of his predecessors, without recognising that he was

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sometimes as careless as he was capable, and that he rarely used his great abilities to the full. He belonged to the school of explorers who prefer rapid traverses and pioneer work, to scientific investigations and detailed surveys. He reminds us by his geographical work of Livingstone, and by his love of sport of Selous, rather than of men like Fischer, Schweinfurth and Junker. He was fonder of the field than of the library, and often did not, apparently, know which of his results were new, and which were known before. The thing of which he was proudest was that he had never taken the life of a native, for he had avoided hostilities owing to his tact and infinite patience, which was especially creditable to a man of such an impulsive temperament. His love of peace, however, was not due to any fear of war, for he was brave to recklessness. That he felt warmly, and could speak impatiently, was shown by his criticisms upon the management of the Emin Relief Expedition. In his most famous expedition it was unfortunate that he followed such a trained naturalist and learned ethnographer as Fischer, and was himself followed by such a laborious and skilled cartographer as von Höhnel. On the other hand, this journey was the one which showed Thomson's powers at their best; for he then had the fullest scope for the exercise of his tact as a leader of men, his dash and daring as an explorer, his enthusiasm as a sportsman, and the consummate skill with which he gained the affections of his men and the confidence of suspicious natives. The same qualities won him respect at home. He is described, by those who knew him, as singularly modest and unassuming. His frank sincerity and genial humour endeared him to a wide circle of friends, who devotedly cared for him in his long illness, and now mourn his early death.

J. W. GREGORY.

WILLIAM CRAWFORD WILLIAMSON.

WHEN the author of this article began the work for his "Einleitung in die Palæophytologie," he soon realised that it was quite impossible to produce such a book without an accurate knowledge of Williamson's collection of sections. He therefore wrote to Manchester and requested permission to make use of the collection. An invitation to Williamson's hospitable house was the immediate result. He there spent eight delightful and busy days, during which the host was never weary of demonstrating his specimens to his guest, who was astonished at their abundance, or of imparting to him the fullest information from his store of knowledge. The guest departed with feelings of the warmest respect and gratitude. In the course of the following years, however, he has often again had the privilege of returning to Manchester and London, and of knitting closer the bonds of reverence and friendship with him who is gone. The last occasion was in the spring of the current year, when the writer left with the conviction that it had been their last meeting. Williamson's death actually took place at Clapham Common, on June 23, when in his seventy-ninth year.

William Crawford Williamson was born at Scarborough, on November 24, 1816. His father, John Williamson, a gardener by profession, but by the bent of his mind a naturalist, and especially a geologist, was a zealous colleague of William Smith, who was attached to him both by friendship and by their common pursuits, and who spent two whole years, 1826–1828, under his roof.

Young Williamson's father encouraged his scientific tastes, even from his earliest days; his observational faculties were strengthened by frequent excursions; the association with Smith, and with the circle of active geologists of that fruitful period, influenced his boyhood, and left behind an effect which lasted his whole life. He has often told the writer about his geological and botanical rambles with his father and friends along the beautiful cliffs of the Scarborough and Whitby coasts. He had an extraordinary love for his more immediate home, and was proud to call himself a Yorkshireman.

Williamson's first publications, "On a Rare Species of *Mytilus*," and "On the Distribution of Organic Remains in the Lias Series of Yorkshire," appeared when he was only in his eighteenth year. About the same time he also contributed a considerable number of drawings to Lindley and Hutton's "Fossil Flora of Great Britain," a work which was completed in 1837, when he was twenty-one. In his later years he did not continue to work much at remains preserved as impressions, for his whole interest had become diverted to anatomical studies. One or two papers on *Zamia gigas* (now called *Williamsonia*), however, owe their origin to the material accumulated in those youthful days. The last and most important of these papers appeared in 1870, in the *Transactions* of the Linnean Society, vol. xxvi., under the title "Contributions towards the History of *Zamia gigas*."

Williamson's family was not much blest with this world's goods. He was therefore obliged to adopt some practical calling, and naturally chose the medical profession, for which he prepared, first at Manchester, while at the same time acting as Curator of the Natural History Museum there, and subsequently in London. In 1840 he became member and licentiate of the Royal College of Surgeons. Soon afterwards he settled in Manchester as a medical man, and remained there over fifty years, carrying on for a long time an extensive practice. In addition to this the professorship of Geology and Natural History at the Owens College was conferred on him in 1851, an office which he administered, in its full extent, for many years. In 1872, however, he handed over the geology to Boyd Dawkins, and from 1880 onwards gave up the zoology, and confined himself to botany. This he continued to teach down to 1892, when his decreasing bodily strength compelled him to retire altogether. He then removed to London, in order that with the aid of the greater facilities there offered he might the better advance the scientific work, which he was still zealously pursuing. Here, after three more years, he too soon ended a life of which one may certainly say, with the Psalmist, that its strength was labour and toil.

For medical practice and professorial duties, though strenuously and most conscientiously carried on, did not satisfy Williamson's mighty power of work. Concurrently with these occupations, a constant flow of scientific production went on, the many-sidedness of which is scarcely conceivable to the present generation. Not only did he write articles in medical journals, which lie beyond the scope of the present notice, he also continued to work with the greatest zeal at zoology, botany, and, above all, geology and palæontology, as is testified by his numerous publications—large and small.

From his youth upwards, Williamson had been much occupied with the investigation of fossil fishes, and in the latter half of the thirties, and beginning of the forties, he wrote various memoirs on this subject. His studies of lower organisms gave rise to the works on *Campylodiscus*,[1] on *Volvox Globator*,[2] and on *Foraminifera*, the last and most important of which, embracing the whole of his researches on the subject, was published by the Ray Society in 1858, under the title of "The British Foraminifera." These writings have received due acknowledgment in the works of Carpenter and Bütschli.

In 1833 the remarkable work by Witham, of Lartington, appeared, in which the study of the internal structure of carboniferous fossil plants was entered upon for the first time, with the help of the thin ground sections

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[1] "Annals of Nat. Hist." vol. i., 1848.

[2] *Memoirs* of the Manchester Lit. and Phil. Soc., vol ix. 1851, and *Transactions* of the Microscopical Soc., vol. i., 1853.

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